

Applic. No.: 10/686,849

Response Dated June 17, 2006

Reply to Office action of March 30, 2006

REMARKS/ARGUMENTS

Reconsideration of the application is requested.

Claims 1, 5, 8-11, and 15-29, and 32-37 remain in the application. Claims 2-4, 6-7, 12-14, and 30-31 have been previously cancelled. Claims 24-29 and 32-37 have been previously withdrawn and rejoinder of method claims 24-29 and 32-37 has been requested.

In second paragraph on page 2 of the above-mentioned Office action, claims 1, 5, 8-11, and 15-23 have been rejected as being unpatentable over Sato et al. (US 6,440,828) in combination with cheng et al. (US 5,873,984) and Slater, Jr. et al. (US 2004/0171204) under 35 U.S.C. § 103(a).

As will be explained below, it is believed that the claims were patentable over the cited art in their original form and the claims have, therefore, not been amended to overcome the references.

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful.

Claim 1 calls for, inter alia:

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a semiconductor body of semiconductor material in a monocrystalline phase, said semiconductor body having one of a trench component and a planar component formed therein, said component being selected from the group consisting of a diode, a bipolar transistor, a MOSFET, and an IGBT;

a metalization layer formed of a metal selected from the group consisting of aluminum, chromium, and aluminum/chromium; and

a layer of said semiconductor material in a substantially amorphous phase disposed between said semiconductor body and said metalization layer, for forming an ohmic contact between said metalization layer and said semiconductor body;

said semiconductor material being silicon and said layer being a layer of amorphous silicon doped with hydrogen.

Additional to the arguments presented in previous response, Applicants would like to emphasize that Sato and Slater relate to the semiconductor technology whereas Cheng relates to a method for vapor depositing an amorphous carbon overcoat as a protection film on a magnetic recording disk.

Sato describes the forming of an ohmic contact in a surface portion of a single crystal silicon region, in which an ion-bombardment that makes the single crystal silicon amorphous is used. Thereafter, titanium is deposited on the amorphous silicon, which is converted to a titanium silicide through an annealing. As a result, a layer sequence single crystal silicon - amorphous silicon - titanium silicide is formed.

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The invention of the instant application differs from the ohmic contact according to Sato in that, on one hand, the amorphous silicon is additionally doped with hydrogen and, on the other hand, aluminum, chromium, or aluminum/chromium, not titanium, is used as the metal. The doping with hydrogen delivers an especially good ohmic contact, as described in detail in the paragraph bridging pages 6 and 7 of the specification of the instant application.

Cheng, as already discussed before, has nothing to do with the semiconductor technology and the hydrogen is not brought in a carbon overcoat, not in silicon. It is simply not understandable why a person skilled in the art, who wants to produce a good ohmic contact, should at all look after carbon overcoat for magnetic recording disk. It is also to be noted that in Cheng nitrogen is also additionally brought in the carbon overcoat. Even if a person skilled in the art would apply Cheng to Sato, he or she must also consider nitrogen as the doping material for the amorphous silicon.

Slater describes an ohmic contact between an implanted silicon carbide and a deposited metal layer. The silicon carbide is subjected to a heat treatment and is doped with a dopant selected from the group consisting of nitrogen, aluminum,

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arsenic, phosphorous, boron, and gallium. See claims 1 and 4 of Slater.

Slater does not provide a person skilled in the art with any hint of using hydrogen as dopant in the amorphous silicon in order to produce an ohmic contact between the monocrystalline silicon via the doped amorphous silicon to a metal layer formed of aluminum, chromium, or aluminum/chromium.

It is accordingly believed to be clear that none of the references, whether taken alone or in any combination, either show or suggest the features of claim 1. Claim 1 is, therefore, believed to be patentable over the art and since all of the dependent claims are ultimately dependent on claim 1, they are believed to be patentable as well.

In view of the foregoing, reconsideration and allowance of claims 1, 5, 8-11, and 15-23 are solicited. Rejoinder of method claims 24-29 and 32-37 is requested upon allowance of product claims under MPBP 821.04 ("if applicant elects claims directed to the product, and a product claim is subsequently found allowable, withdrawn process claims which depend from or otherwise include all the limitations of the allowable product claim will be rejoined").

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In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate a telephone call so that, if possible, patentable language can be worked out.

If an extension of time for this paper is required, petition for extension is herewith made. Please charge any fees which might be due with respect to 37 CFR Sections 1.16 and 1.17 to the Deposit Account of Lerner Greenberg Stemmer LLP, No. 12-1099.

Respectfully submitted,

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June 17, 2006

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